In the claims

The following amendments are made with respect to the claims in the international application PCT/GB03/02976.

This listing of claims will replace all prior versions and listings of claims in this application.

1 (Original). A method for monitoring cells in a microfluidic device, wherein the device includes a chamber comprising a sensor, and the monitoring is under conditions such that attachment of cells to the surface of the chamber is inhibited.

2 (Currently amended). [[A]] The method according to claim 1, wherein the chamber surface comprises a gas-permeable material.

3 (Currently amended). [[A]] The method according to claim 2, wherein the gas is selected from the group consisting of CO_2, NH_3, [[or]] and O_2.

4 (Currently amended). [[A]] The method according to claim 2 ~~or claim 3~~, wherein the material is a fluropolymer.

5 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the chamber surface comprises a hydrophilic material.

6 (Currently amended). [[A]] The method according to claim 5, wherein the hydrophilic material is polyvinyl alcohol.

7 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the chamber is formed in an epoxy resin coated on a plastics substrate.

8 (Currently amended). [[A]] The method according to claim 7, wherein the plastics ~~material~~ substrate is polycarbonate.

9 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the chamber comprises a plurality of sensors.

10 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

11 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the sensor is an optical sensor.

12 (Currently amended). [[A]] The method according to claim 11, wherein the sensor is a holographic sensor.

13 (Currently amended). [[A]] The method according to ~~any of claims 1 to 10~~ claim 1, wherein the sensor is an electrochemical or acoustic sensor.

14 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the sensor is sensitive to a reactant or product of fermentation.

15 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, wherein the volume of the chamber is from 50 nL to 10 μL.

16 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, which further comprises introducing growth medium into the chamber, wherein the sensor is sensitive to a reactant or product of cell growth.

17 (Currently amended). [[A]] The method according to claim 16, wherein the growth medium comprises a non-metabolisable mannose analogue.

18 (Currently amended). [[A]] The method according to claim 17, wherein the analogue is methyl α-D-mannopyranoside.

19 (Currently amended). [[A]] The method according to ~~any preceding~~ claim 1, which further comprises introducing a component of or derived from the cells into a second microfluidic chamber comprising a sensor and in connection with the first chamber detecting said component.

20 (Currently amended). [[A]] The method according to claim 19, wherein the component is a product of cell growth.

21 (Currently amended). [[A]] The method according to claim 19, wherein the component is an expressed protein or enzyme.

22 (Currently amended). [[A]] The method according to ~~any of the claims 19 to 23~~ claim 19, wherein the sensor of the second chamber is as defined in any of claims 10-15.

23 (Currently amended). A microfluidic device ~~suitable for use in a method according to any preceding claim,~~ which comprises a chamber including a sensor and inlets for a sample and for a growth medium, wherein the chamber surface is such that, in use, attachment of cells thereto is inhibited.

24 (Currently amended). [[A]] The device according to claim 23, ~~having any of the features defined in claims 2 to 15~~ wherein the chamber surface comprises a gas-permeable material.

25 (Currently amended). [[A]] The device according to claim 23 ~~or claim 24~~, which comprises a plurality of the chambers.

26 (Currently amended). [[A]] The device according to claim 25, wherein the chambers are in the form of an array.

27 (Currently amended). [[A]] The device according to claim 25 ~~or claim 26~~, wherein a pair of chambers is connected by a channel.

28 (New). The device, according to claim 23, wherein the material is a fluropolymer.

29 (New). The device, according to claim 23, wherein the chamber surface comprises a hydrophilic material.

30 (New). The device, according to claim 23, wherein the chamber is formed in an epoxy resin coated on a plastic substrate.

31 (New). The device, according to claim 23, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

32 (New). The device, according to claim 23, wherein the sensor is an optical sensor.

33 (New). The device, according to claim 23, wherein the sensor is a holographic sensor.

34 (New). The device, according to claim 23, wherein the sensor is an electrochemical or acoustic sensor.

35 (New). The device, according to claim 23, wherein the sensor is sensitive to a reactant or product of fermentation.

Clean Version of Amended Claims

The following amendments are made with respect to the claims in the international application PCT/GB03/02976.

This listing of claims will replace all prior versions and listings of claims in this application.

1 (Original). A method for monitoring cells in a microfluidic device, wherein the device includes a chamber comprising a sensor, and the monitoring is under conditions such that attachment of cells to the surface of the chamber is inhibited.

2 (Currently amended). The method according to claim 1, wherein the chamber surface comprises a gas-permeable material.

3 (Currently amended). The method according to claim 2, wherein the gas is selected from the group consisting of CO_2, NH_3, and O_2.

4 (Currently amended). The method according to claim 2, wherein the material is a fluropolymer.

5 (Currently amended). The method according to claim 1, wherein the chamber surface comprises a hydrophilic material.

6 (Currently amended). The method according to claim 5, wherein the hydrophilic material is polyvinyl alcohol.

7 (Currently amended). The method according to claim 1, wherein the chamber is formed in an epoxy resin coated on a plastics substrate.

8 (Currently amended). The method according to claim 7, wherein the plastics substrate is polycarbonate.

9 (Currently amended). The method according to claim 1, wherein the chamber comprises a plurality of sensors.

10 (Currently amended). The method according to claim 1, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

11 (Currently amended). The method according to claim 1, wherein the sensor is an optical sensor.

12 (Currently amended). The method according to claim 11, wherein the sensor is a holographic sensor.

13 (Currently amended). The method according to claim 1, wherein the sensor is an electrochemical or acoustic sensor.

14 (Currently amended). The method according to claim 1, wherein the sensor is sensitive to a reactant or product of fermentation.

15 (Currently amended). The method according to claim 1, wherein the volume of the chamber is from 50 nL to 10 μL.

16 (Currently amended). The method according to claim 1, which further comprises introducing growth medium into the chamber, wherein the sensor is sensitive to a reactant or product of cell growth.

17 (Currently amended). The method according to claim 16, wherein the growth medium comprises a non-metabolisable mannose analogue.

18 (Currently amended). The method according to claim 17, wherein the analogue is methyl α-D-mannopyranoside.

19 (Currently amended). The method according to claim 1, which further comprises introducing a component of or derived from the cells into a second microfluidic chamber comprising a sensor and in connection with the first chamber detecting said component.

20 (Currently amended). The method according to claim 19, wherein the component is a product of cell growth.

21 (Currently amended). The method according to claim 19, wherein the component is an expressed protein or enzyme.

22 (Currently amended). The method according to claim 19, wherein the sensor of the second chamber is as defined in any of claims 10-15.

23 (Currently amended). A microfluidic device which comprises a chamber including a sensor and inlets for a sample and for a growth medium, wherein the chamber surface is such that, in use, attachment of cells thereto is inhibited.

24 (Currently amended). The device according to claim 23, wherein the chamber surface comprises a gas-permeable material.

25 (Currently amended). The device according to claim 23, which comprises a plurality of the chambers.

26 (Currently amended). The device according to claim 25, wherein the chambers are in the form of an array.

27 (Currently amended). The device according to claim 25, wherein a pair of chambers is connected by a channel.

28 (New). The device, according to claim 23, wherein the material is a fluropolymer.

29 (New). The device, according to claim 23, wherein the chamber surface comprises a hydrophilic material.

30 (New). The device, according to claim 23, wherein the chamber is formed in an epoxy resin coated on a plastic substrate.

31 (New). The device, according to claim 23, wherein the sensor is sensitive to oxygen, carbon dioxide, ammonium ion or pH.

32 (New). The device, according to claim 23, wherein the sensor is an optical sensor.

33 (New). The device, according to claim 23, wherein the sensor is a holographic sensor.

34 (New). The device, according to claim 23, wherein the sensor is an electrochemical or acoustic sensor.

35 (New). The device, according to claim 23, wherein the sensor is sensitive to a reactant or product of fermentation.